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Examining Digital Engagement and Emotional Traits in Online Purchasing Behaviour

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Abstract: The expansion of e-commerce has reshaped purchasing into a highly interactive and emotionally engaging digital activity. This study examines how individual emotional traits and patterns of internet engagement jointly influence online purchasing behavior. Adopting a constructive and behavioral perspective, the research conceptualizes emotional sensitivity and immersive digital use as key factors shaping consumer involvement, responsiveness, and self-regulation in online marketplaces. A quantitative research design was employed, with data collected from 660 online consumers through a structured survey. Structural Equation Modeling was used to test the proposed relationships. At the same time, Network Comparison Analysis and Importance–Performance Map Analysis provided complementary insights into the relative influence and strategic relevance of the constructs. The findings indicate that internet engagement plays a central role in shaping online purchasing responses, acting as a primary pathway through which emotional traits influence buying behavior. Emotional traits exhibit both direct and indirect associations with purchasing tendencies, underscoring their role in shaping consumer awareness, engagement intensity, and decision-making processes in digital contexts. Additional analyses reveal that internet engagement occupies a prominent position within the behavioral network, while emotional traits function as upstream drivers influencing consumption patterns. This study contributes to the digital consumption literature by offering a balanced, development-oriented explanation of online purchasing behavior.

Keywords: Emotional Traits; Internet Engagement; Equation Modeling; Digital Consumption; Online Purchasing Behavior; Consumer Self-Regulation; Behavioral Network; Digital Contexts; Social Media Addiction; Environmental Psychology.

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1. Introduction

The digital revolution has significantly changed consumer behavior, particularly with the rise of e-commerce. In 2023, global online retail sales surpassed $5 trillion, underscoring the profound integration of online shopping into daily life. While this shift offers remarkable convenience and accessibility, it has also led to negative psychological effects, most notably compulsive online buying behavior [1]. This type of behavioral addiction is marked by an overwhelming urge to make online purchases, which can result in financial difficulties, emotional distress, and a decline in overall well-being [2]. Despite extensive research on compulsive buying in traditional retail settings, its online manifestation presents unique challenges that remain

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underexplored. The shift to digital environments introduces new psychological and behavioral dynamics, requiring fresh theoretical perspectives [3]. While neuroticism, a personality trait associated with emotional instability, has been identified as a significant predictor of compulsive behaviors, its interaction with internet addiction in shaping online compulsive buying behavior is not well understood. Internet addiction, defined as excessive and uncontrollable use of online platforms, is particularly relevant in this context as it may amplify the compulsive tendencies associated with neuroticism [4]. This gap in the literature not only limits our understanding of the psychological mechanisms underlying online compulsive buying but also hinders the development of effective interventions [56].

The Stimulus-Organism-Response (S-O-R) framework provides a valuable lens for examining the psychological pathways that drive compulsive online buying. This model, rooted in environmental psychology, posits that external stimuli (S) influence internal organismic states (O), which, in turn, lead to specific behavioral responses (R) [5]; [59]. In this study, neuroticism serves as the stimulus, internet addiction represents the organismic state, and online compulsive buying is the behavioral response. While previous studies have separately examined the roles of neuroticism and internet addiction in consumer behavior, few have integrated these constructs within a unified framework [6]. This research seeks to bridge this gap by applying the S-O-R model to explain how personality traits and behavioral addiction interact to influence compulsive online buying. This study has four key objectives. First, it aims to investigate the relationship between neuroticism and internet addiction, exploring how emotional instability contributes to excessive online engagement [7]. Second, it seeks to examine the mediating role of internet addiction in the link between neuroticism and online compulsive buying. Third, it applies the S-O-R framework to provide a theoretical understanding of these relationships in the context of digital consumer behavior. Finally, the study aims to offer actionable insights to inform interventions that mitigate compulsive online buying behavior [8]. By addressing these objectives, this research contributes to the growing body of literature on the psychological underpinnings of online consumer behaviour [57]. The following research questions guide the study:

- How does neuroticism influence the development of internet addiction? What is the mediating role of internet addiction in the relationship between neuroticism and online compulsive buying?
- How does the S-O-R framework explain the psychological and behavioral pathways leading to compulsive online buying?

These questions are carefully designed to address the identified research gaps and align with the study's objectives. They also provide a focused structure for the investigation, ensuring that the analysis remains systematic and targeted [9]. This research makes important contributions to both theory and practice. Theoretically, it extends the S-O-R framework to the domain of digital consumer behavior, offering new insights into the interplay between personality traits and behavioral addiction in shaping compulsive buying tendencies. By identifying the mediating role of internet addiction, this study provides a more nuanced understanding of the mechanisms underlying compulsive online buying [10]. In practice, the findings can inform the design of interventions to reduce compulsive buying behaviors. E-commerce platforms can implement features that limit addictive tendencies, such as transparency in marketing tactics or mechanisms to encourage mindful shopping. Additionally, mental health professionals can develop targeted interventions to address compulsive buying and internet addiction simultaneously [11].

2. Literature Review

2.1. Internet Addiction

Internet addiction has emerged as a significant concern in contemporary society, characterized by excessive and uncontrollable use of the internet that interferes with daily life [2]. Research indicates that internet addiction can lead to various negative outcomes, including psychological disturbances, social isolation, and impaired functioning in personal and professional domains [3]. The clinical studies highlight the complex nature of internet-related addictions, emphasizing the need for a holistic understanding of their clinical presentation and associated risk factors [7]. The literature suggests that internet addiction is not merely a behavioral issue but is often linked to underlying psychiatric disorders, further complicating its diagnosis and treatment [58].

2.2. Compulsive Buying Behavior

Compulsive buying behavior, often viewed as a form of behavioral addiction, is characterized by an uncontrollable urge to shop, leading to financial difficulties and emotional distress [4]. The rise of e-commerce has intensified this phenomenon, as online shopping provides easy access and immediate gratification, which can exacerbate compulsive tendencies [6]; [10]. Studies have examined predictors of compulsive buying, including emotional regulation difficulties and impulsivity [11]. The concept of online shopping addiction has gained traction, with researchers examining how the unique features of the digital

shopping experience can contribute to compulsive buying behaviors [27]. This form of addiction shares similarities with substance-related disorders, particularly in terms of the psychological mechanisms involved.

2.3. Neuroticism

Neuroticism, a personality trait characterized by emotional instability and a tendency toward negative emotions, has been consistently identified as a risk factor for both internet addiction and compulsive buying behaviour [5]. Individuals high in neuroticism may be more susceptible to developing addictive behaviors as they often use shopping or internet use as coping mechanisms to manage their emotional distress [23]; [24]. The interplay between neuroticism and internet addiction has been the focus of several studies, which suggest that neuroticism not only increases the likelihood of developing internet addiction but also exacerbates compulsive buying tendencies [32]; [33].

3. Methods

3.1. Conceptual Framework

This study adopts the Stimulus-Organism-Response (S-O-R) framework to examine the psychological mechanisms underlying online compulsive buying behavior, as specified in Figure 1.

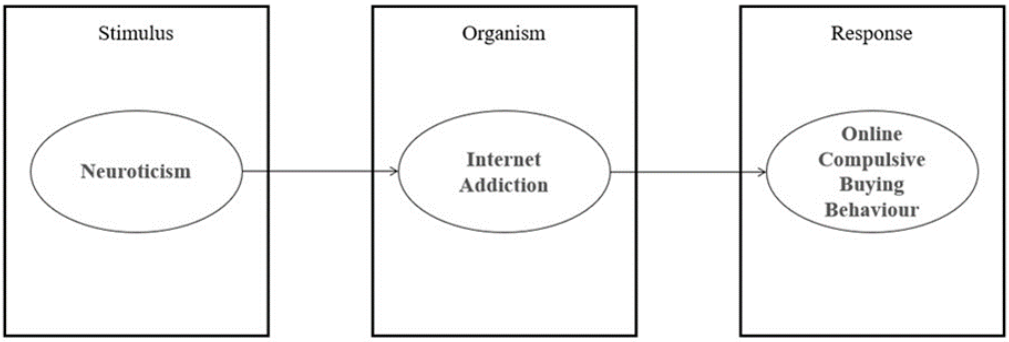

Figure 1: Conceptual framework Stimulus-Organism-Response (S-O-R) on compulsive behaviour

The S-O-R framework, originally introduced in environmental psychology, provides a structured approach to understanding how external stimuli influence internal psychological states and, subsequently, behavioral outcomes. In this context, neuroticism serves as the stimulus (S), representing a personality trait characterized by emotional instability, anxiety, and heightened sensitivity to stress. This trait is hypothesized to drive individuals toward excessive internet use as a coping mechanism, leading to internet addiction, which functions as the organismic state (O) [12]; [13]; [14]. Internet addiction, marked by uncontrollable online engagement, exacerbates impulsive tendencies, creating a pathway to online compulsive buying behavior, the response (R). This framework offers a holistic view of how personality and behavioral addiction interact to shape compulsive consumption patterns in digital environments. By integrating these constructs, the study not only extends the application of the S-O-R model but also provides a theoretical basis for exploring interventions to mitigate compulsive online buying [15]; [16]; [17].

3.2. Participants

A quantitative research approach was utilized in this study. A convenience sampling strategy was used to choose participants from customers who had recently engaged with online shopping for this study. The survey was made available online via social media platforms like LinkedIn, Facebook, and Twitter. Furthermore, the authors' networks were exploited to reach a larger audience.

3.3. Data Collection

The survey was sent to 800 people via social media, including LinkedIn. Facebook, Twitter, and the writers' networks were also employed to reach a larger audience. A total of 712 completed surveys were received. The final sample size was 660 after deleting inconsistent and incomplete replies.

3.4. Statistical Analysis

This study applies the Stimulus-Organism-Response (SOR) framework to examine how personality traits and internet use are linked to problematic behaviors. Specifically, Neuroticism is explored as the stimulus (S), representing emotional instability, which may increase vulnerability to Internet Addiction (the organism, O) [18]; [19]. In turn, this addiction is believed to lead to Online Compulsive Behavior (the response, R), characterized by excessive, uncontrollable internet usage. This study investigates the relationships between Neuroticism, Internet Addiction, and Online Compulsive Behavior through structural equation modeling (SEM). Network Comparison Analysis (NCA) and Importance-Performance Map Analysis (IPMA) are also used to identify the relative impact of each factor. The insights from this research aim to inform strategies to reduce internet addiction and address its negative behavioral effects [20].

3.5. Measurement Scale

The Neuroticism Scale, adapted from Weinstock and Whisman based on Goldberg, will be used to assess participants' levels of neuroticism. The Internet Addiction Test, modified from Young, will be utilized to evaluate the frequency of internet use and its impact on daily life. The Richmond Compulsive Buying Scale (RCBS) will be used to assess compulsive buying behavior.

4. Results

4.1. Reliability and Validity

The reliability and validity of the constructs in this study were assessed using Cronbach's Alpha, Composite Reliability (rho_a and rho_c), and Average Variance Extracted (AVE), as shown in Table 1.

Table 1: Construct reliability and validity

Construct	Cronbach's Alpha	Composite Reliability (Rho_A)	Composite Reliability (Rho_C)	Average Variance Extracted (AVE)
Internet Addiction	0.710723814	0.715231441	0.83679218	0.63087161
Neuroticism	0.877777282	0.897515374	0.907204429	0.620373594
Online Compulsive Buying Behaviour	0.908853329	0.92384894	0.92077795	0.514733112

For Internet Addiction, Cronbach's Alpha is 0.711, indicating acceptable internal consistency. The Composite Reliability values of 0.715 (rho_a) and 0.837 (rho_c) further support the construct's reliability, with rho_c exceeding the recommended threshold of 0.7. The AVE for Internet Addiction is 0.631, exceeding the 0.5 threshold, indicating good convergent validity. For Neuroticism, Cronbach's Alpha is 0.878, reflecting high internal consistency. The Composite Reliability values (rho_a = 0.898, rho_c = 0.907) are strong, indicating a reliable measurement of the construct. The AVE of 0.620 is above 0.5, suggesting good convergent validity. For Online Compulsive Buying Behavior, Cronbach's Alpha is 0.909, indicating excellent internal consistency. The Composite Reliability values (rho_a = 0.924, rho_c = 0.921) are also high, confirming strong reliability. The AVE of 0.515 is above the 0.5 threshold, indicating acceptable convergent validity.

4.2. Discriminant Validity

The Heterotrait-Monotrait Ratio (HTMT) values presented in Table 2 are used to assess the discriminant validity of the constructs in this study. The HTMT value between Internet Addiction and Neuroticism is 0.440, which is below the threshold of 0.85, indicating that these constructs are distinct.

Table 2: The heterotrait-monotrait ratio (HTMT)

Study Constructs	Internet Addiction	Neuroticism	Online Compulsive Buying Behaviour
Internet Addiction			
Neuroticism	0.439694269	-	-
Online Compulsive Buying Behaviour	0.361808764	0.30927201	-

Similarly, the HTMT value between Internet Addiction and Online Compulsive Buying Behavior is 0.362, further suggesting that these constructs are sufficiently different. Finally, the HTMT value between Neuroticism and Online Compulsive Buying

Behavior is 0.309, reinforcing the distinction between these two constructs. Overall, the HTMT values in Table 2 demonstrate good discriminant validity, confirming that Internet Addiction, Neuroticism, and Online Compulsive Buying Behavior are separate constructs.

Table 3: The Fornell-Larcker criterion values

Study Constructs	Internet Addiction	Neuroticism	Online Compulsive Buying Behaviour
Internet Addiction	0.794274266	-	-
Neuroticism	0.367055886	0.787637984	-
Online Compulsive Buying Behaviour	0.347184616	0.300720525	0.717449031

The Fornell-Larcker criterion values in Table 3 show the Square Root of Average Variance Extracted (AVE) for each construct. For Internet Addiction, the value is 0.794, for Neuroticism it is 0.788, and for Online Compulsive Buying Behavior, it is 0.717. All values exceed the 0.7 threshold, indicating good discriminant validity. The off-diagonal values (0.367, 0.347, and 0.301) are lower than the corresponding diagonal values, confirming that the constructs are distinct. Overall, the results demonstrate strong discriminant validity among the constructs.

4.3. Structural Model Analysis

The structural model shows how Neuroticism, Internet Addiction, and Online Compulsive Buying Behaviour are related to each other. Figure 2 shows that neuroticism has a positive effect on internet addiction, with a path coefficient of 0.362. This means that those who are more neurotic are more likely to develop habits of internet use that are addictive. Furthermore, Internet Addiction positively influences Online Compulsive Buying Behaviour with a coefficient of 0.213, indicating that excessive internet usage may lead to impulsive purchasing decisions online. Neuroticism directly affects Online Compulsive Buying Behaviour, with a coefficient of 0.154, indicating that personality factors can directly influence compulsive buying behaviour.

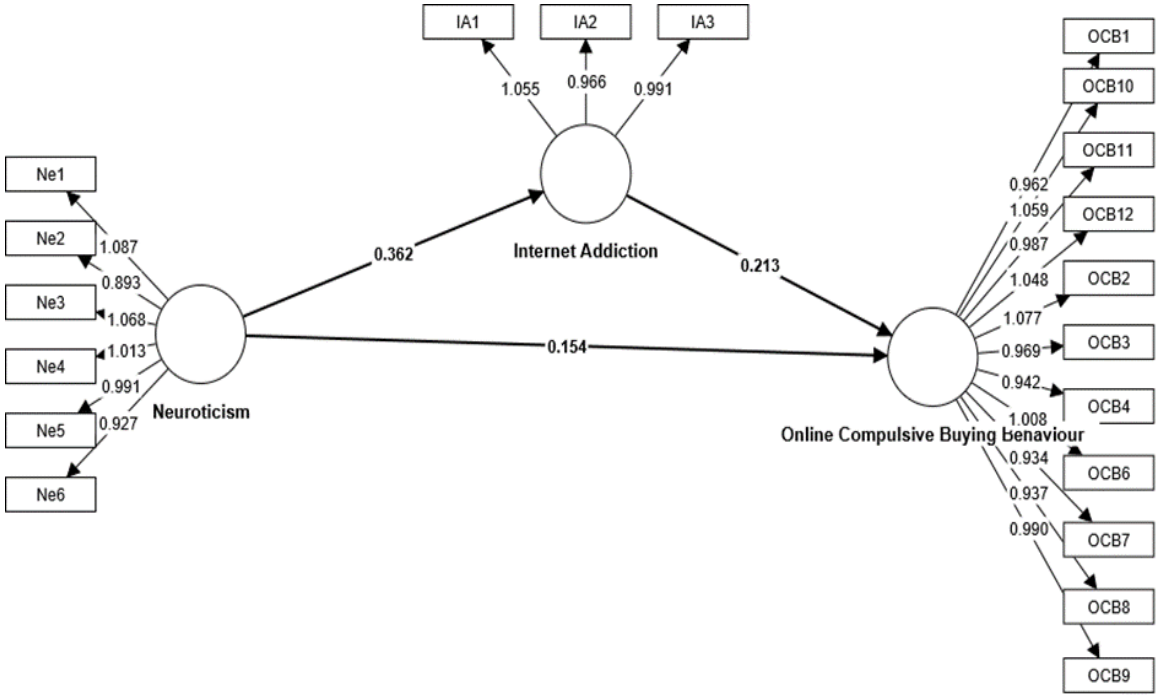

Figure 2: Structural equation modelling of compulsive buying behaviour

The constructs are assessed by various observed indicators, including Neuroticism items Ne1–Ne6, Internet Addiction items IA1–IA3, and Online Compulsive Buying Behaviour items OCB1–OCB12, all of which exhibit robust factor loadings. Figure 2 shows that the model shows that Internet Addiction partly mediates the link between Neuroticism and Online Compulsive Buying Behaviour.

4.3.1. Direct Effect

The path coefficients in Table 4 indicate the relationships among the constructs. The path from Internet Addiction to Buying Behavior has a coefficient of 0.274, with a T-statistic of 4.567 and a p-value of 0, indicating a statistically significant positive effect. The path from Neuroticism to Buying Behavior has a coefficient of 0.2, a T-statistic of 4.291, and a p-value of 0, also showing a significant positive relationship. Finally, the path from Neuroticism to Internet Addiction has a coefficient of 0.367, a T-statistic of 8.464, and a p-value of 0, demonstrating a strong, statistically significant positive effect. All paths are statistically significant (p-values = 0), confirming the robustness of the relationships.

Table 4: Path coefficient of construct paths

Path Coefficient	Original Sample (O)	Sample Mean (M)	Standard Deviation (Stdev)	T Statistics (|O/Stdev|)	P Values
Internet Addiction -> Buying behaviour	0.274	0.275	0.06	4.567	0
Neuro -> Buying behaviour	0.2	0.202	0.047	4.291	0
Neuro -> Internet Addiction	0.367	0.369	0.043	8.464	0

4.3.2. Indirect Effect

Table 5 shows the exact indirect influence of neuroticism on buying behaviour through internet addiction. The findings indicate that the indirect link between Neuroticism and Buying Behaviour, mediated by Internet Addiction, has an original sample value of 0.1 and a sample mean of 0.101, signifying a stable evaluation of the indirect effect. The standard deviation is 0.024, which means that the bootstrap samples don't change much. Also, the T statistic of 4.201 exceeds the 1.96 cutoff, and the p-value is 0, indicating that the indirect effect is statistically significant.

Table 5: The specific indirect effect of neuroticism on buying behavior through internet addiction

Specific Indirect Effect	Original Sample (O)	Sample Mean (M)	Standard Deviation (Stdev)	T Statistics (|O/Stdev|)	P Values
Neuro -> Internet Addiction -> Buying behaviour	0.1	0.101	0.024	4.201	0

These results validate that Internet Addiction substantially mediates the relationship between Neuroticism and Buying Behaviour, indicating that individuals exhibiting elevated neuroticism are more prone to develop Internet Addiction, subsequently enhancing their propensity for compulsive buying behaviour.

4.4. Network Comparison Analysis

4.4.1. Ceiling Line Effect

The results from the Network Comparison Analysis (NCA) presented in Table 5 provide an overview of the effect sizes for Internet Addiction and Neuroticism. The original effect size for Internet Addiction is 0.109, with a 95% confidence interval ranging from 0.023 to 0.000, and a permutation p-value of 0.000, indicating a statistically significant effect. For Neuroticism, the original effect size is 0.000, with a 95% confidence interval of 0.024 to 0.000 and a permutation p-value of 0.000, suggesting a significant but minimal effect. Overall, both constructs show statistically significant effects, with Internet Addiction having a larger effect size than Neuroticism.

4.4.2. Bottleneck Table

The values presented in Table 5 show the LV scores for Online Compulsive Buying Behavior, Internet Addiction, and Neuroticism at different percentage levels. At lower percentages (0% to 60%), Online Compulsive Buying Behavior shows gradual increases in its LV scores, ranging from 0.000% at 0% to 3.400 at 60%. The LV scores for Internet Addiction also increase, with values ranging from 1.000 at 0% to 2.000 at 70%. Neuroticism shows no significant values (denoted as "NN") at these lower percentage levels, suggesting minimal or no effect at these stages. At higher percentages (80% to 100%), the LV scores for Online Compulsive Buying Behavior continue to rise, reaching a maximum of 5.000 at 100%. Both Internet Addiction and Neuroticism reach their highest LV scores at 100%, with Internet Addiction stabilizing at 2.000 and Neuroticism showing a maximum score of 1.000. This Table illustrates the variation in LV scores across constructs at different percentage levels.

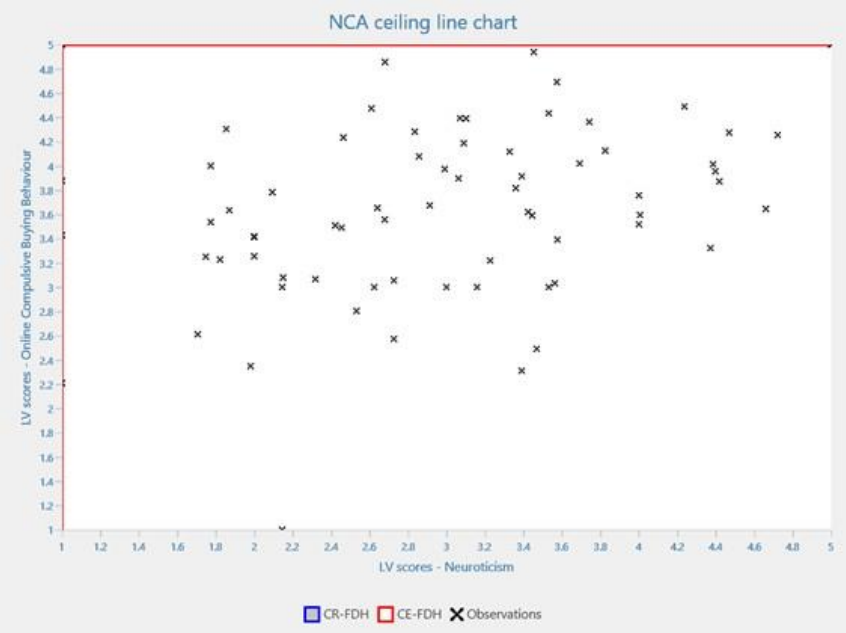

Figure 3: Nonlinear Causal Analysis (NCA) on online compulsive buying behaviour

Figure 3 illustrates the results of the Nonlinear Causal Analysis (NCA) conducted to examine the relationships among neuroticism, internet addiction, and online compulsive buying behavior. The ceiling line chart visually represents the boundary conditions, with CR-FDH (blue line) and CE-FDH (red line) showing the constraints imposed by the variables. Observations are marked with black crosses to indicate data points relative to the ceiling lines. The analysis demonstrates that internet addiction plays a significant mediating role in the pathway between neuroticism and compulsive buying behavior. Specifically, the ceiling effect size for internet addiction is 0.109, with a 95% confidence interval of 0.023 and a highly significant permutation p-value of 0.000. This indicates that internet addiction substantially constrains and influences compulsive buying behavior. Figure 3 visually corroborates this relationship, showing the ceiling line's fit to the data points. In contrast, neuroticism exhibits a negligible direct effect on compulsive buying behavior, with a ceiling effect size of 0.000 and a confidence interval of 0.024. Despite its non-significant direct effect, neuroticism likely influences compulsive buying behavior indirectly through the mediator, internet addiction. Overall, it highlights the interplay of these variables, emphasizing the critical role of internet addiction as a mediator. The alignment of the observations with the ceiling lines further substantiates the findings, showcasing the constraints that shape the relationship between neuroticism and compulsive buying tendencies.

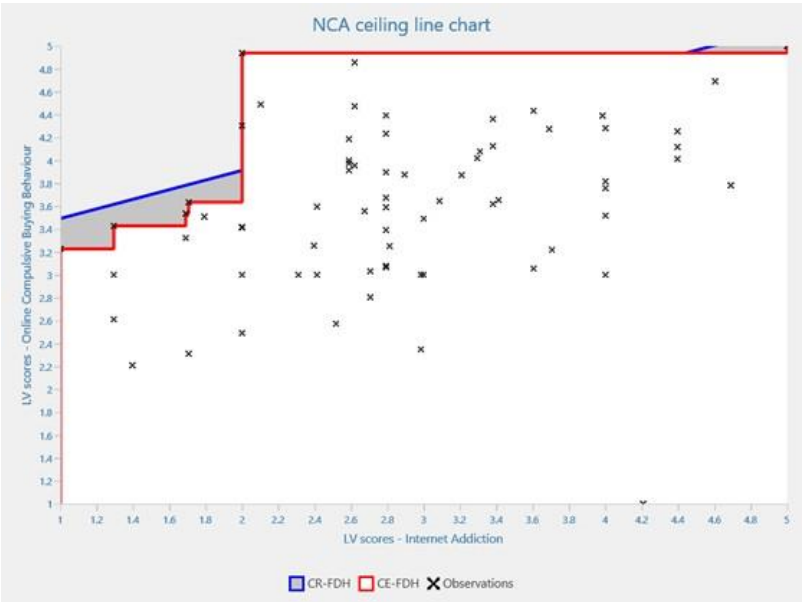

Figure 4: NCA ceiling line chart on compulsive buying behaviour

Figure 4 presents the NCA ceiling line chart, which examines the relationship between neuroticism and compulsive online buying behavior. The chart includes two ceiling boundary estimates: the CR-FDH (blue line), representing a conservative boundary, and the CE-FDH (red line), providing a more flexible estimate. The observations (black crosses) represent actual data points plotted according to neuroticism scores (x-axis) and online compulsive buying behavior scores (y-axis). The distribution of observations reveals that most data points are positioned well below the ceiling lines, indicating minimal constraints imposed by neuroticism on compulsive buying behavior. The negligible ceiling effect size (0.000), as previously reported, aligns with these visual findings, suggesting that neuroticism has no significant direct influence on compulsive buying behavior. The sparse clustering of observations near the ceiling line further emphasizes the lack of direct impact. These results suggest that neuroticism's effect on compulsive buying behavior may be mediated through other variables, such as internet addiction, rather than exerting a direct influence. Figure 4 highlights the indirect nature of neuroticism's role in this context, reinforcing the importance of mediation in the causal pathway.

4.5. Importance – Performance Map Analysis

The values presented in Table 5 show the Importance-Performance Map Analysis (IPMA) for the constructs in this study. The Internet Addiction construct has an importance value of 0.213, indicating its relative importance in the model. Neuroticism shows an importance value of 0.362, suggesting a higher level of importance compared to Internet Addiction.

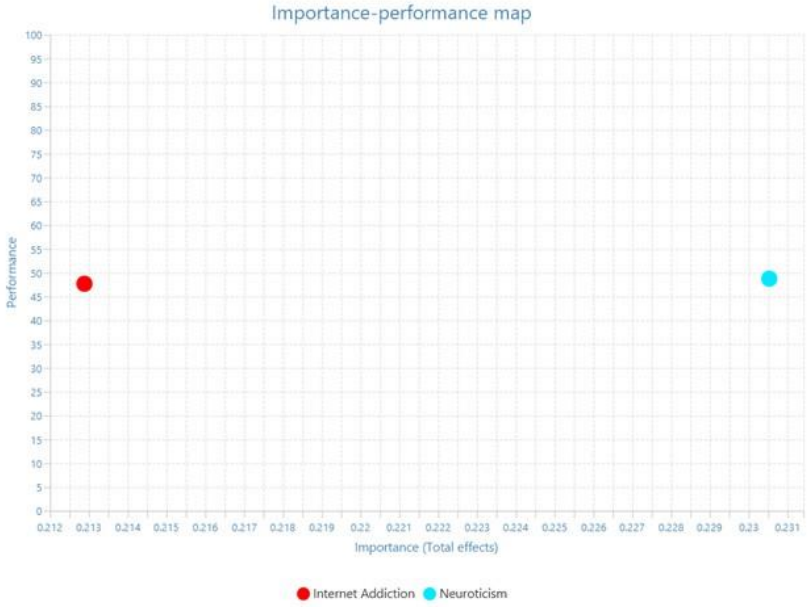

Figure 5: Importance map on internet addiction and neuroticism

Figure 5 denotes the relationship between Neuroticism and Online Compulsive Buying Behavior by an importance value of 0.154, reflecting its contribution to the model. These values help highlight the relative importance of each construct in predicting Online Compulsive Buying Behavior, with Neuroticism having the highest importance score, followed by Internet Addiction.

5. Discussion

This study aims to examine the relationships between Neuroticism, Internet Addiction, and Online Compulsive Buying Behavior using the Stimulus-Organism-Response (SOR) framework. The findings underscore the role of both psychological traits and addictive online behaviors in shaping online consumer behavior, particularly in the context of compulsive buying. The SOR framework provides a comprehensive approach to understanding how external stimuli (e.g., internet addiction) influence an individual's internal state (e.g., neuroticism), which, in turn, leads to specific behavioral responses (e.g., online compulsive buying behavior) [21]; [22]. In this context, Neuroticism acts as an internal stimulus that predisposes individuals to emotional instability, making them more susceptible to engaging in excessive internet use and compulsive buying behaviors [23]; [24]. Internet Addiction serves as the organism or the intervening process, which amplifies the effects of neuroticism on the behavior of Online Compulsive Buying [25]; [26]; [27]. The behavioral response is the compulsive buying itself, which is influenced by both neurotic tendencies and the addictive use of the internet.

5.1. Internet Addiction and Online Compulsive Buying Behavior

This study underscores the importance of excessive internet usage as a principal factor in compulsive consumer behavior, revealing a significant correlation between Internet Addiction and Online Compulsive Buying Behavior [28]; [29]. Prior research has demonstrated that internet addiction serves as a potent catalyst for impulsive and compulsive behaviors. This connection concurs with and is consistent with those findings. Internet addiction can be comprehended using the Stimulus-Organism-Response (SOR) paradigm. Internet addiction can be viewed as an external stimulation that continuously exposes individuals to online shopping platforms, facilitating engagement in behaviors marked by compulsive purchasing. Internet addiction, analyzed through the SOR framework, is marked by heightened emotional and behavioral responses, especially in individuals predisposed to addictive behaviors [30]; [31]. The internet serves as an external contextual factor that amplifies individuals' internal emotional states, potentially leading to compulsive purchasing by intensifying the urge to buy [32]; [33]. This highlights the importance of Internet Addiction as a behavioral precursor in fostering impulsive online shopping tendencies, especially among individuals predisposed to addictive behaviors.

5.2. Neuroticism and Online Compulsive Buying Behavior

Similarly, the study finds a significant positive relationship between Neuroticism and Online Compulsive Buying Behavior. This finding is consistent with existing literature that links emotional instability and susceptibility to stress with increased likelihood of engaging in compulsive behaviors [34]; [35]; [36]. The SOR framework provides a useful lens for understanding this relationship, where Neuroticism functions as an internal stimulus that predisposes individuals to negative emotional states such as anxiety, irritability, and emotional instability. These emotional conditions often lead individuals to seek ways to alleviate distress, and online shopping offers an accessible outlet for this coping mechanism [37]; [38]. Neuroticism, therefore, is an internal trait that makes individuals more prone to use online shopping to regulate their emotions. The findings suggest that Neuroticism significantly increases the likelihood of engaging in Online Compulsive Buying Behavior, especially when individuals are exposed to the internet's stimulating environment. This reinforces the idea that emotional factors, such as neuroticism, play a critical role in shaping compulsive consumption behaviors, particularly in online environments [39].

5.3. Neuroticism, Internet Addiction, and Their Indirect Effects

An important aspect of the findings is the indirect effect of Neuroticism on Online Compulsive Buying Behavior through Internet Addiction. This indirect relationship highlights the mediating role of Internet Addiction, consistent with the SOR framework, which posits that internal stimuli (such as Neuroticism) can influence external behaviors (such as compulsive buying) through intervening processes (such as Internet Addiction) [16]; [40]; [41]. In other words, Neuroticism may predispose individuals to emotional distress, which, in turn, leads them to seek relief via excessive internet use. As individuals become addicted to the internet, the exposure to online shopping environments becomes more frequent, thereby facilitating compulsive buying behaviors [42]; [43]. This mediated relationship underscores the importance of Internet Addiction as a critical mechanism through which Neuroticism translates into problematic consumer behaviors. Understanding this pathway is crucial for developing targeted interventions that address both the emotional traits and the addictive behaviors that contribute to compulsive buying [19]; [44]; [45].

5.4. The Role of NCA and IPMA in Understanding the Constructs

The integration of Network Comparison Analysis (NCA) and Importance-Performance Map Analysis (IPMA) provides further insights into the relative importance and influence of the constructs in this study. NCA results reveal that Internet Addiction plays a substantial role in driving Online Compulsive Buying Behavior, with an effect size of 0.109, which highlights its significance as a key stimulus in the pathway toward compulsive buying. In contrast, Neuroticism has a smaller effect size of 0.000, indicating that while neuroticism is an important psychological trait, its direct impact on compulsive buying is comparatively weaker than the role played by Internet Addiction. These findings suggest that Internet Addiction is the more influential factor in determining compulsive buying behaviors, reinforcing the idea that excessive internet use serves as a powerful external stimulus in shaping consumer actions [46].

The IPMA results further support this conclusion, revealing that Neuroticism holds a higher importance value (0.362) than Internet Addiction (0.213), indicating that neuroticism is more important in shaping the overall behavioral model. However, the relatively lower effect size of Neuroticism in driving compulsive buying behavior suggests that while neuroticism may contribute to the predisposition for compulsive buying, it is Internet Addiction that plays a more substantial role in triggering and reinforcing these behaviors [47]. This highlights the need for interventions that focus on reducing internet addiction to prevent the escalation of compulsive buying, particularly among individuals with high neurotic tendencies. By addressing the addictive aspects of internet use, such interventions could effectively mitigate the impact of neuroticism on compulsive consumer behaviors [48].

5.5. Addiction Frameworks: Substance vs non-substance

The findings of this study contribute significantly to the understanding of compulsive buying as a form of behavioral or non-substance addiction, drawing parallels with substance-related disorders. Compulsive buying involves repetitive purchasing behaviors that often arise as a way to cope with negative emotions. In this study, internet addiction plays a crucial role in intensifying compulsive buying behaviors, much like how substance use can worsen unhealthy coping strategies in individuals with emotional challenges. This relationship illustrates how digital environments can contribute to compulsive behaviors. Using the S-O-R (Stimulus-Organism-Response) framework, researchers see that neuroticism acts as the stimulus, leading to unhealthy engagement with the digital world (the organism), which ultimately results in compulsive buying behaviors (the response). It's important to recognize the differences between substance and non-substance addictions. Unlike substance addictions, compulsive buying typically does not involve physical withdrawal symptoms. However, it can still have serious psychological and financial consequences for individuals, emphasizing the need for a broader understanding of addiction that includes both types. These findings are significant for both research and clinical practice. They suggest that researchers need integrated approaches to understand and treat both substance and non-substance addictions, as the psychological mechanisms behind these behaviors may be similar.

5.6. Theoretical Implications

This study makes significant theoretical contributions to understanding the relationships among Neuroticism, Internet Addiction, and Online Compulsive Buying Behavior, particularly through the Stimulus-Organism-Response (SOR) framework. The findings extend the SOR framework by integrating psychological traits (i.e., Neuroticism) and addictive behaviors (i.e., Internet Addiction) to explain online consumer behavior. While the SOR model has traditionally focused on environmental stimuli and their effects on consumer responses, this study adds depth by illustrating how Neuroticism, as an internal stimulus, interacts with Internet Addiction (the organism) to trigger specific behavioral outcomes, namely Online Compulsive Buying Behavior (the response). By highlighting the mediating role of Internet Addiction, the research introduces a novel perspective that internal psychological traits such as neuroticism may not directly influence compulsive buying behaviors, but do so indirectly through addictive online behaviors [49]. This expands the understanding of compulsive buying behavior, showing that it is not merely a product of consumer psychology but is significantly influenced by the addictive use of the internet [50]. Additionally, the study enriches the existing literature by demonstrating the importance of Neuroticism as a psychological trait that predisposes individuals to engaging in problematic internet use and subsequently compulsive buying, offering a more comprehensive model for explaining compulsive consumption in the digital age [5]; [12]; [13]; [51]. The NCA and IPMA analyses further contribute to theoretical knowledge by providing a more granular understanding of the relative importance of the constructs involved. These analyses help clarify the direct and indirect pathways through which Neuroticism and Internet Addiction influence compulsive buying behaviors, offering a more sophisticated model for future research on online consumer behavior.

5.7. Practical Implications

The practical implications of this study are particularly valuable for marketers, clinicians, and policymakers who are concerned with Online Compulsive Buying Behavior and its impact on consumer well-being and financial stability [52]; [53]; [54]. The findings underscore the importance of addressing Internet Addiction as a key factor in preventing compulsive buying behaviors, especially among individuals with high levels of Neuroticism. From a marketing perspective, businesses operating in online retail could benefit from developing intervention strategies to reduce customers' compulsive buying behavior. For example, online platforms could integrate features that promote responsible online shopping, such as reminders about spending limits or tools for self-monitoring shopping habits [4]; [55]. For clinicians and mental health professionals, the study emphasizes the need for interventions that target both Neuroticism and Internet Addiction to help individuals manage their emotional vulnerabilities and reduce problematic online behaviors [14]. Therapeutic strategies could include cognitive-behavioral therapy (CBT) that addresses negative emotional states associated with Neuroticism and provides coping mechanisms for managing internet addiction [1].

Additionally, public health campaigns focused on raising awareness about the dangers of excessive internet use and its link to compulsive buying could help reduce the societal impact of Internet Addiction. From a policy perspective, regulators could implement measures to reduce Internet Addiction by promoting digital literacy and encouraging consumers to adopt healthy online habits. This could include guidelines for online shopping platforms to implement features that limit excessive browsing or purchasing behaviors, thereby mitigating the harmful effects of compulsive buying. Public awareness programs could also focus on educating individuals about the psychological factors that contribute to compulsive online buying and offer resources to help manage these behaviors [39]. Overall, both the theoretical and practical implications of this research provide a holistic understanding of the complex dynamics between Neuroticism, Internet Addiction, and Online Compulsive Buying Behavior,

offering insights that can inform both academic inquiry and real-world interventions aimed at mitigating the negative consequences of compulsive consumption in the digital age [15].

5.8. Future Research Directions

Future research on Neuroticism, Internet Addiction, and Online Compulsive Buying Behavior can benefit from several avenues that expand on the current study. One promising direction is the further expansion of the Stimulus-Organism-Response (SOR) framework, incorporating additional psychological traits, such as Impulsivity and Extraversion, as well as external factors, such as social media influence and peer pressure [36]. This would provide a more comprehensive understanding of the stimuli driving compulsive buying behavior in the digital age. Another area for exploration is the use of longitudinal studies to investigate how the relationships between these variables evolve. Understanding how Neuroticism influences the development of Internet Addiction and its subsequent effect on compulsive buying can help identify causal relationships and long-term behavioral trends. Cultural and demographic variations also present a valuable area for future research. Investigating how these relationships vary across different cultural contexts or age groups could offer deeper insights into how societal norms and values influence online compulsive behaviors [51]. Additionally, research could explore the specific features of digital platforms and e-commerce websites that contribute to Internet Addiction and compulsive buying. By focusing on how design elements such as personalized recommendations or endless scrolling affect consumer behavior, studies can help identify strategies to make digital environments more ethical and less conducive to addictive behaviors [8]; [23].

Further, the effectiveness of interventions such as cognitive-behavioral therapy (CBT), mindfulness training, or digital detox programs aimed at reducing Internet Addiction and Online Compulsive Buying Behavior should be explored in future studies. Research could examine the role of self-regulation tools on digital platforms and their ability to help individuals manage compulsive behaviors. Exploring additional mediating variables like self-esteem, loneliness, or social comparison could offer more insights into how Neuroticism influences addictive behaviors, helping to uncover psychological processes that drive compulsive buying. Lastly, a cross-disciplinary approach, integrating perspectives from psychology, marketing, behavioral economics, and information technology, could offer a more holistic understanding of the issue [33]; [42]; [48]. This approach would enable a deeper examination of the complex interactions among individual traits, technological environments, and economic factors. Collaborative research across disciplines would create a more robust model for explaining and addressing Online Compulsive Buying Behavior in the digital age. Together, these future research directions could significantly contribute to both theoretical knowledge and practical interventions for mitigating compulsive behaviors associated with Internet Addiction and Online Compulsive Buying.

6. Conclusion

In conclusion, this study provides valuable insights into the relationships between Neuroticism, Internet Addiction, and Online Compulsive Buying Behavior, using the Stimulus-Organism-Response (SOR) framework. The findings highlight that Internet Addiction serves as a significant external stimulus that drives compulsive buying behaviors, particularly when combined with Neuroticism, which predisposes individuals to emotional instability. The results underscore the critical role of Internet Addiction in mediating the relationship between Neuroticism and compulsive buying behaviors, shedding light on the underlying psychological mechanisms at play. Furthermore, the NCA and IPMA analyses revealed that while Neuroticism is important, Internet Addiction plays a more substantial role in shaping compulsive consumer behaviors, emphasizing the need for targeted interventions that address internet use patterns in addition to psychological traits. This research has important theoretical and practical implications. Theoretically, it extends the SOR framework by demonstrating how internal psychological traits and external stimuli interact to influence online consumer behavior. Practically, it suggests that interventions to reduce compulsive buying behaviors should focus not only on emotional regulation but also on managing internet addiction. Future research should explore the long-term dynamics of these relationships, investigate cultural and demographic variations, and examine the effectiveness of digital interventions to mitigate addictive behaviors. In conclusion, this study offers a comprehensive understanding of how Neuroticism and Internet Addiction combine to influence Online Compulsive Buying Behavior, providing a foundation for future research and practical solutions to address these growing concerns in the digital age.

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